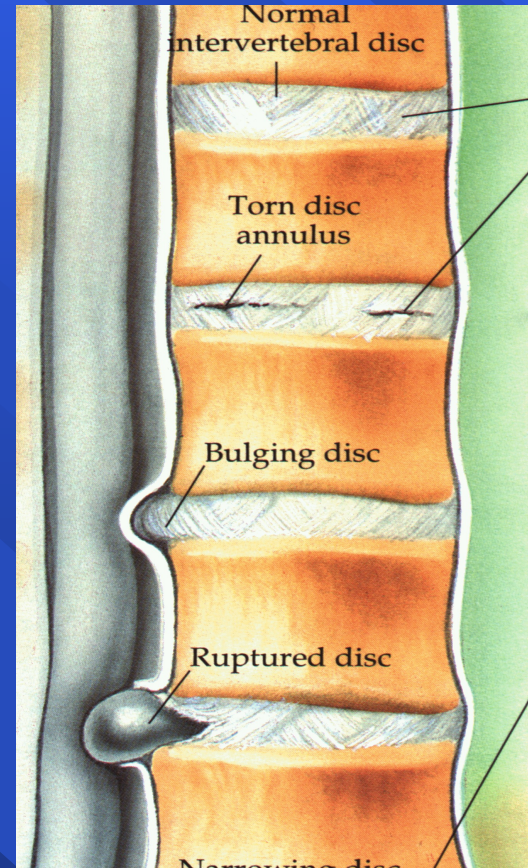


# Sciatica/H NP

Thomas M. Howard, MD  
Sports Medicine

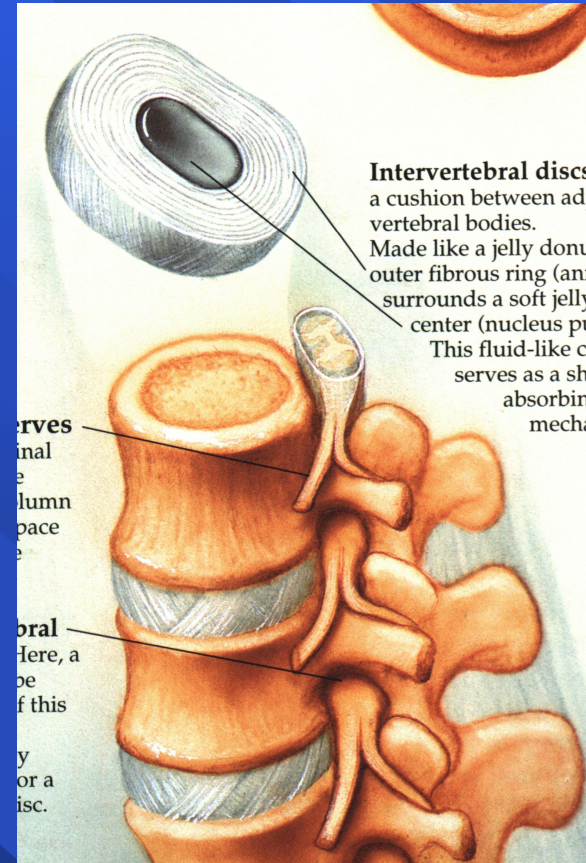
# HNP-Epidemiology

- 30-40 yo
- >95% @ L4-5 and L5-S1
- 75% resolve in 6 months
- 5-10% require surgery



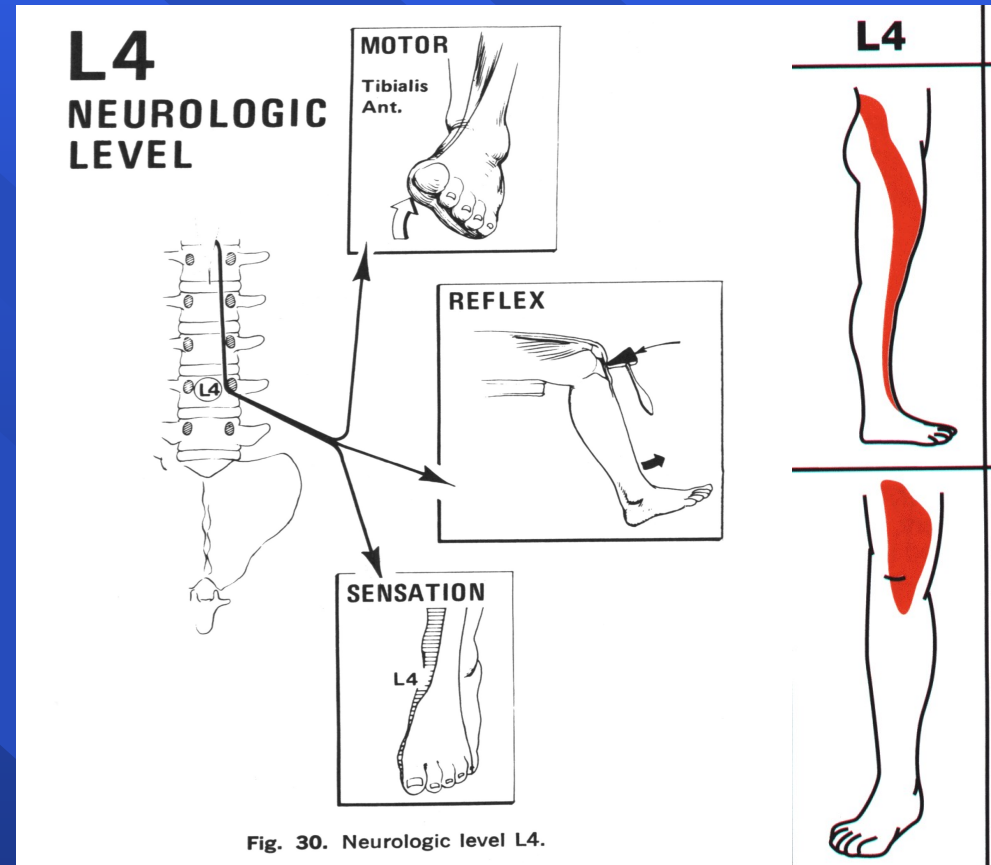
# Joints

- zygoapophyseal (facets)
  - synovial joint (cartilage, capsule, synovium)
  - limit extension/flexion
- Disc
  - nucleus pulposus
  - two end plates
  - annulus fibrosis
    - » laminated collagen fibers
    - » 65° orientation



# L4

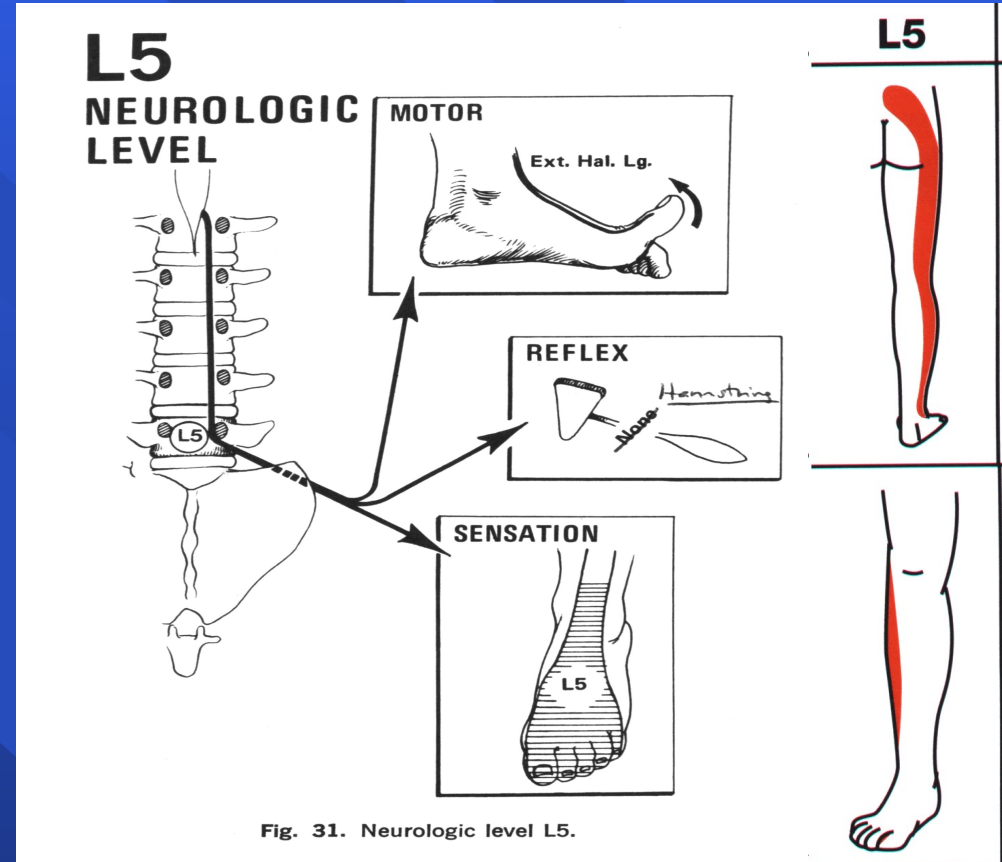
- Motor- quad and tibialis anterior
- Sensory- medial foot
- DTR- patellar





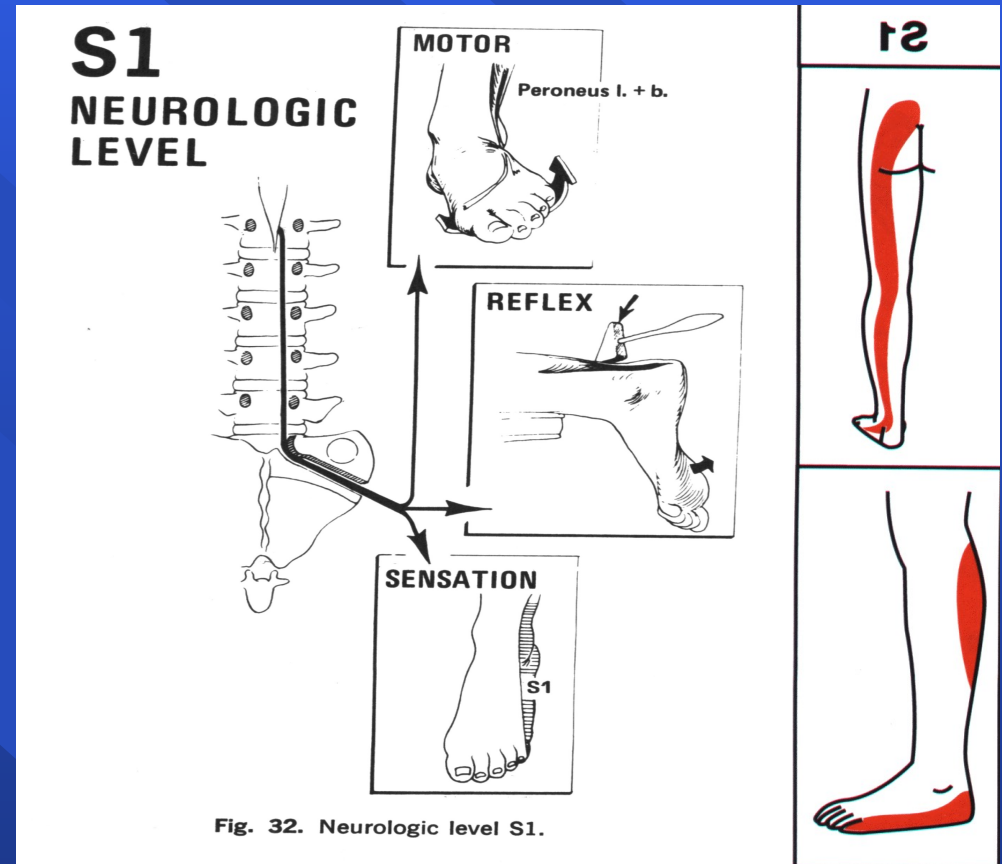
# L5

- Motor- extensor hallucis longus (EHL)
- Sensory- dorsal foot
- DTR- none



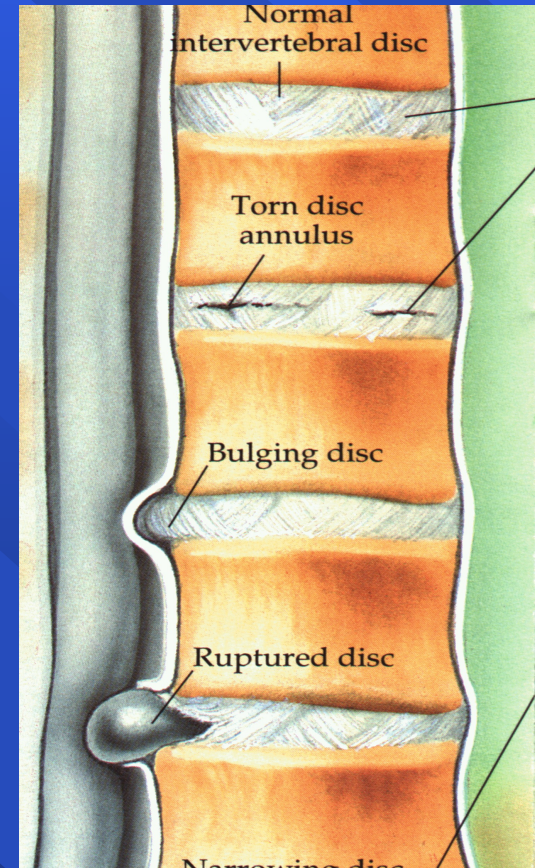
# S1

- Motor- foot plantar flexion and eversion
- Sensory- lateral foot
- DTR- achilles



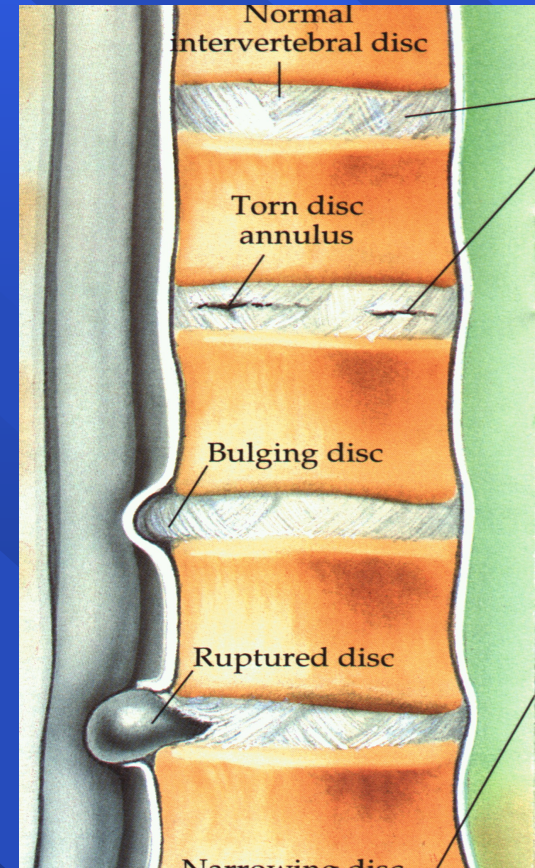
# HNP-Pain

- Torn annular fibers of disc
- Chemical and mechanical irritation of:
  - spinal root
  - soft tissues (posterior longitudinal ligament)



# Annular Tear

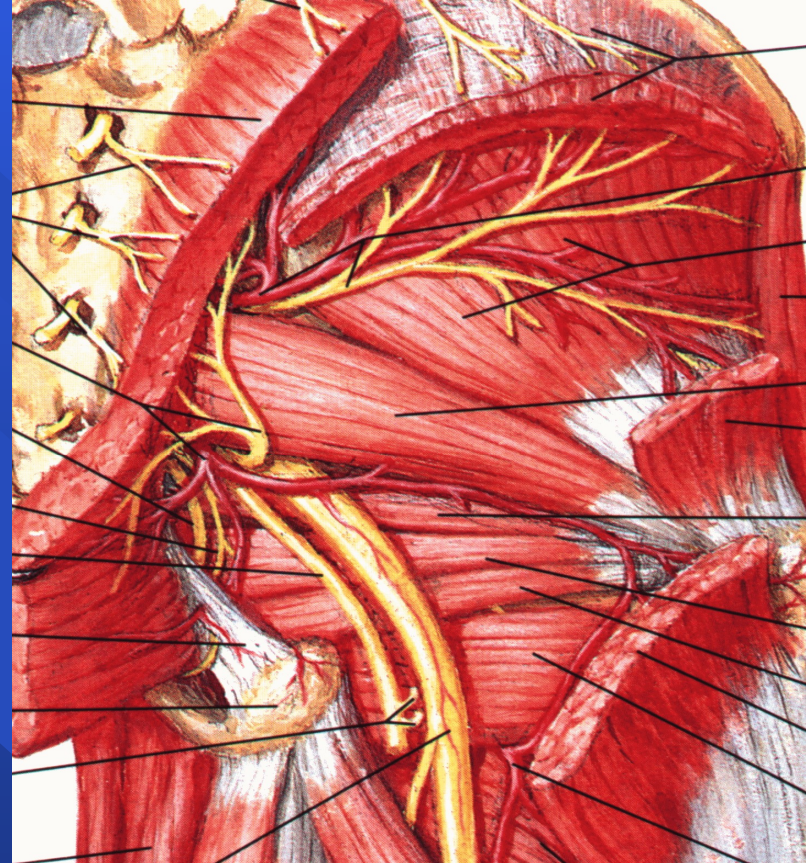
- Lumbar strain
- Locked in flexion without neuro sx





# Sciatic Neuropathy

- HNP
- Trauma
  - blunt- fall or contusion
  - penetrating- injection, fracture, stab
  - traction- hip surgery
- Peripheral Compression
  - wallet sciatica
  - piriformis syndrome (myofascial)





# History

# Onset

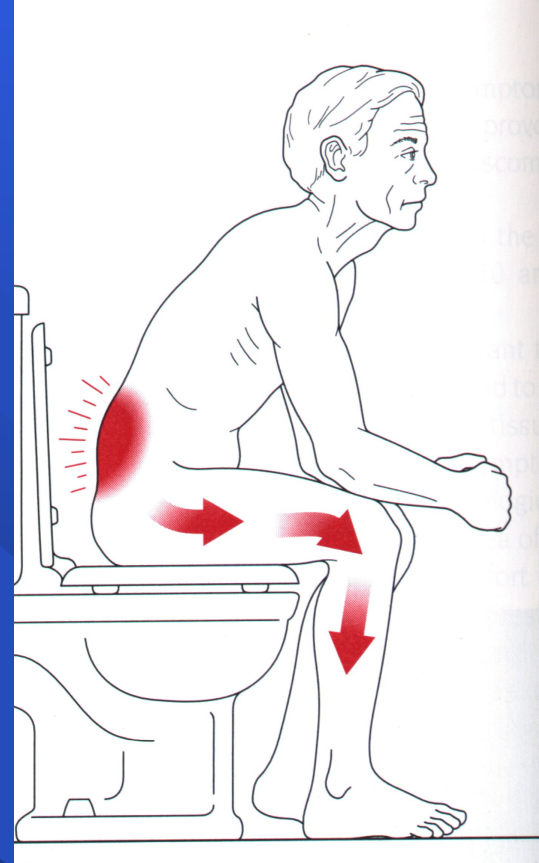
- Usually spontaneous and without discrete event
- Discrete events
  - lift
  - cough/sneeze
  - prolonged drive
  - flexion/flexion with twist

# Pain with...

- Prone position
  - Facet, Lat HNP, systemic
- Sitting
  - Paramedian HNP, annular tear
- Standing
  - Lateral HNP, central stenosis, facet syndrome
- Walking
  - Central stenosis

# Other Symptoms

- Cough/valsalva exacerbation
- Distal neuro sx - weakness/paresthesia
- **Bowel/bladder sx**



# Red Flags

## Cauda Equina

Saddle anesthesia  
Bladder Dysf  
Progressive Neuro  
Def  
Sphincter laxity  
Peroneal sensory  
Loss  
Major motor  
Weakness  
-Quad  
-Foot drop

## Fracture

Trauma  
-MVA  
-Fall  
Minor trauma in older  
pt

## Tumor/Infection

>50 <20  
h/o cancer  
Fever, chills, wt loss  
Infection RF's  
-Immune supp  
-IV drug use  
-Recent  
Night pain  
Increased pain when  
supine



# Differential Diagnosis

## Young

MSLBP  
Diskitis  
Pars Defect  
HNP  
Scheurmann's  
Kyphosis

## Middle Age

MSLBP  
Annular Tear  
HNP  
Tumor  
SI Dysfunc  
Spondylo-  
Arthropathy

## Older

OA/DJ D  
Facet  
DDD  
HNP  
Spinal Stenosis  
Tumor  
Referred  
AAA  
Retroperitoneal  
Prostate

# Examination

- Walk
- Standin  
g
- Sitting
- Supine

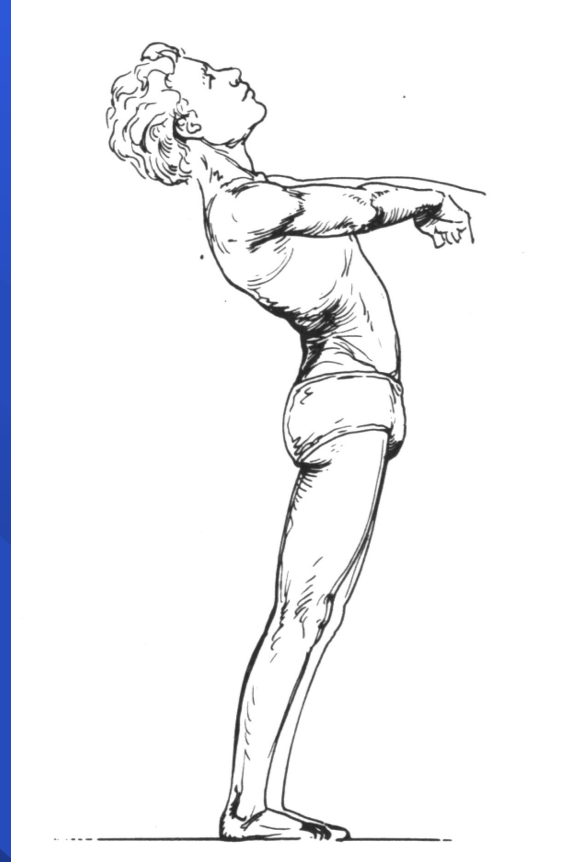
# Walking

## ■ Gait

- length of stride
- arm swing
- trunk motion
- ?pelvic tilt

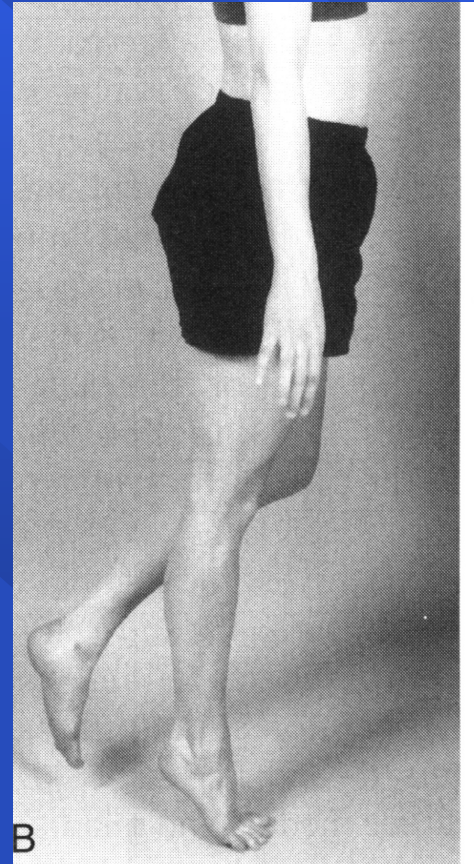
# Standing - Range of Motion

- FF  $\sim 90^\circ$  (reversal of lumbar lordosis with FF)
- Ext  $\sim 15-20^\circ$
- Side bend  $\sim 45^\circ$
- Trunk rotation



# Standing - Other Tests

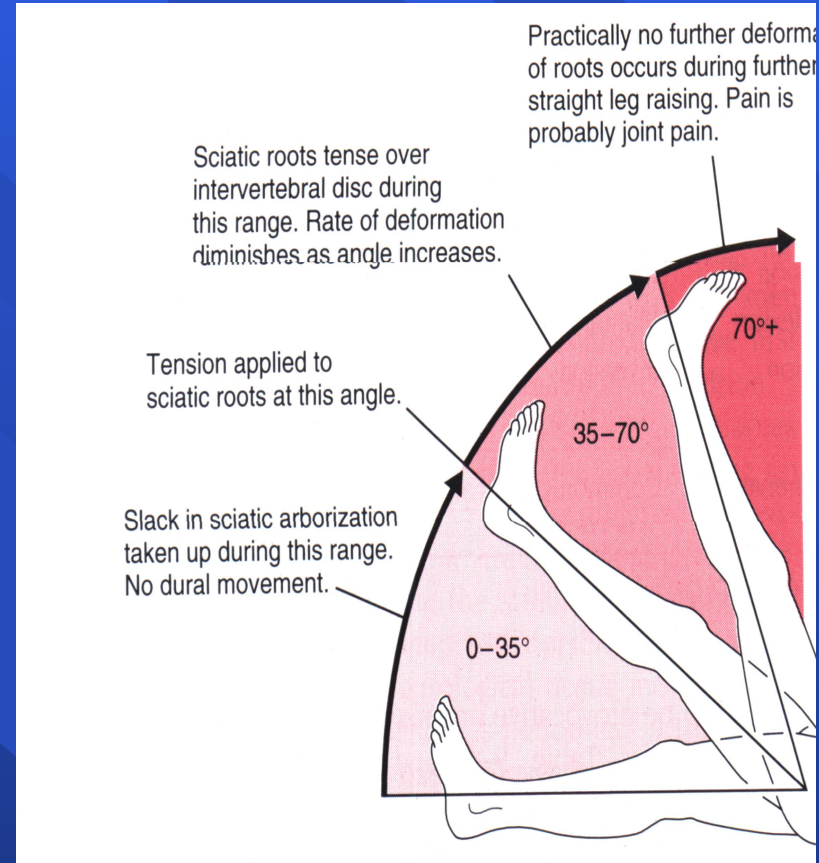
- Single leg extension
- **Gastroc strength**
- Squat
- Standing single-leg balance (nl 15-30 sec)





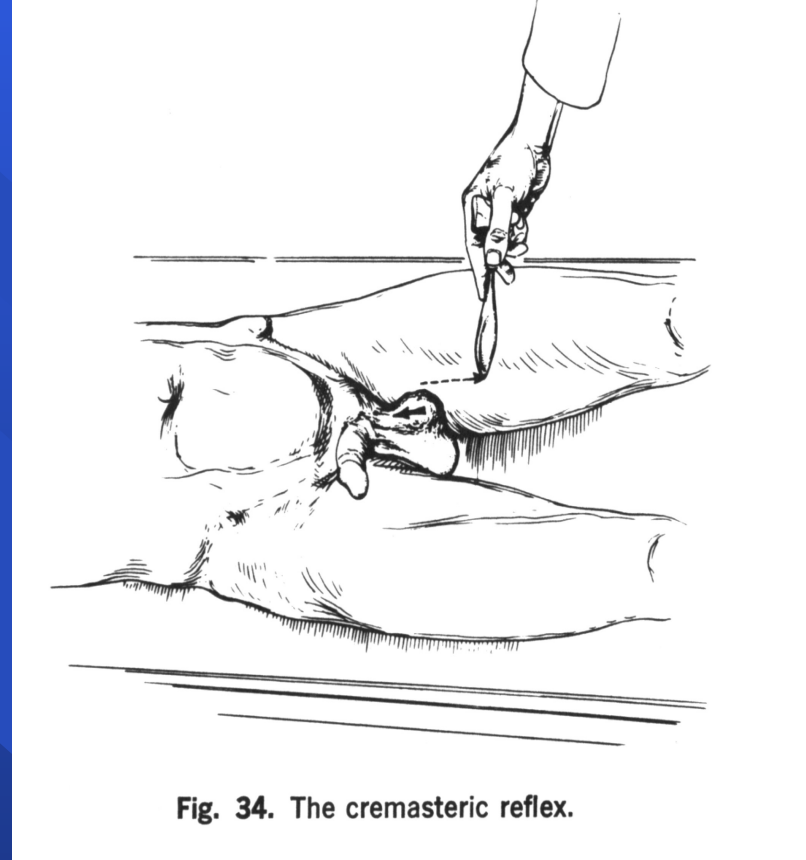
# Supine

- SLR (Lasegue Test)
- Passive hip flexion
- Modified Thomas Test (Quad & Hip flexor flexibility)
- FABER (Patrick Test)
- SI Compression Test



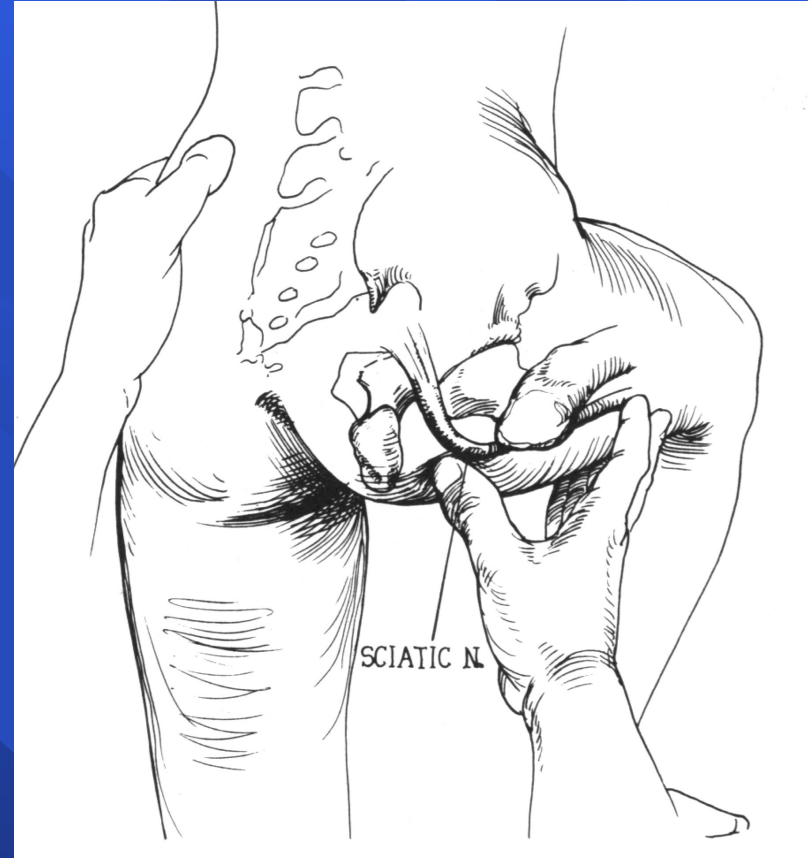
# Supine

- Rectal tone
- Anal wink
- Cremasteric reflex



# Supine - Palpation

- Spinous processes
- Dorsal lumbar fascia/soft tissues
- Sacral notch tenderness



# Radiographs

- Early if ominous signs - fever, night pain, age >60, h/o Ca, wt loss, trauma
- Symptoms > 1 month



# MRI/CT

- Not needed to diagnose HNP
- 30% asx patients will have an abn MRI
- Order if hx/exam confusing
- Roadmap for surgeon
- MRI
  - more costly, increased time to scan, problem with claustrophobic patients





# EMG/NCV

- R/O peripheral neuropathy
- Localize nerve injury
- Correlate with radiographic changes
- Order after 4 weeks of symptoms

**TABLE 5-1. ELECTROPHYSIOLOGICAL FINDINGS COMMONLY PRESENT IN NEUROLOGIC DISEASE\***

Type of Disease	Spontaneous Activity	Motor Unit Potential Configuration	Motor Unit Potential Recruitment	Nerve Conduction Studies	Repetitive Stimulation
Muscle disease	NL or fibs†	Myopathic	NL or myopathic	Essentially normal‡	NL
Myasthenia gravis§	NL	May be variable	NL	NL	Decrement
Peripheral nerve disease	Fibs	Neuropathic	NL or neuropathic	Decreased amplitude and/or slow conduction	NL
Anterior horn cell disease	Fibs	Neuropathic, may be “giant”	NL or neuropathic	NL¶	NL or decrement
Upper motor neuron disease	NL	NL	NL or decreased number firing slowly#	NL	NL

# Lab Studies

- Generally not necessary

# Acute Management

- Relative rest
  - no more than 48 hrs bedrest
- Educate patient
  - body mechanics
  - natural history of the condition
- Modalities
  - Ice
  - Heat
  - Ultrasound
  - Electric Stimulation

# Acute Management

## ■ Medications

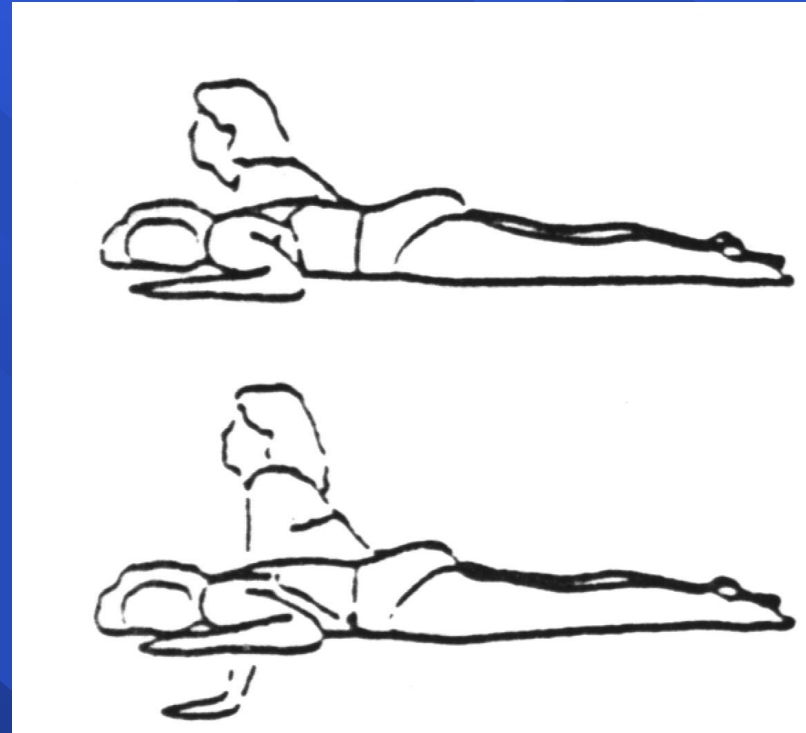
- Pain control
  - » Tylenol/NSAID's
  - » minimize narcotic use
- Muscle relaxers
  - » use Valium for short term (1-2 days)
- Corticosteroids
  - » 2mg/Kg burst for 5-7 days



# Acute Management

## ■ Exercises

- Extension biased
  - » discogenic
- flexion biased
  - » posterior element pain



# Physical therapy

- Bracing
- Traction
- Education
- Modalities
- Tissue flexibility and segmental motion
- Strengthening and postural control
- Home program instruction

# Traction

- May decrease disc pressure 20-30%
- May allow separation of vertebrae to decrease nerve root compression

# Subacute Management

- Continue patient education
- Activity & Conditioning
  - walking
- Stretching - HS, hip extensors, erector spinae
- Strengthening - abs, erector spinae
- Mechanics - lifting technique, sport, ...
- Avoid
  - prolonged sitting/standing
  - recurrent bending
  - twisting



# Epidural Steroid Injection (ESI)

- Local anti-inflammatory
- Performed by experienced anesthesiologist
- May buy time for the pt with marginal surgical indications



# Referral

- HNP (> 8 weeks)
- Ominous signs/sx - fever, weakness, bowel/bladder dysfunction
- Progressive neuro deficit or flaccid paralysis

# Caveats of Management

- Adequate/complete initial evaluation
- Follow-up evaluations
  - 1-3 days for acute pain
  - 4-6 weeks for chronic pain
- Activity as tolerated
- Survey for Red Flags

